POLLUTION PREVENTION/GOOD HOUSEKEEPING

FOR MUNICIPAL OPERATIONS:

A GUIDANCE DOCUMENT
OF
BEST MANAGEMENT PRACTICES

WNY
Stormwater
Coalition

Erie County Department of Environment and Planning
Division of Environmental Compliance Services

POLLUTION PREVENTION/GOOD HOUSEKEEPING FOR MUNICIPAL

OPERATIONS:

A GUIDANCE DOCUMENT OF BEST MANAGEMENT PRACTICES

TABLE OF CONTENTS

INTRODUCTION

This group of (18) Pollution Prevention/Good Housekeeping Best Management Practices that relate to municipal operations and their potential effects on stormwater have been developed and assembled by a group of municipal officials that have a wealth of experience pertaining to operations and maintenance within municipalities. The information that has been formulated as guidance material for implementation of the Stormwater Phase II Municipal Separate Storm Sewer System Permit **has not** been designed to be comprehensive in all aspects of each topic. Municipalities should be "flexible" in their use of this information as pertains to their own unique municipal operations.

STORMWATER REFERENCE INFORMATION

Many sources of information concerning stormwater are available. The sources listed below were used to develop the Pollution Prevention/ Good Housekeeping Practices outlines:

New York State Dept. of Transportation – (http://www.dot.state.ny.us) - use the search function to locate the Environmental Handbook for Transportation Operations document and other related information

Cornell University - (http://www.cornell.edu) – the Dept. of Horticulture has information pertaining to pest control, landscaping and lawn care

U.S. Environmental Protection Agency - (http://www.epa.gov) – the National Menu of Best Management Practices (BMPs) for NPDES Storm Water Phase II document can be found at http://cfpub.epa.gov/npdes/stormwater/menuofbmps/menu.cfm within the EPA website, along with other stormwater related information

Rick\StWtrOutlineInfo

GLOSSARY OF TERMS

Biochemical oxygen demand – Depletion of dissolved oxygen in water caused by decomposition of chemical or biologic matter.

Catch Basin – A unit that is installed to capture and retain debris, particulate matter, or other solid materials, but allows stormwater to "flow through" to its discharge location

Drip Irrigation –irrigation via a perforated device (i.e. hose) that allows for a slow watering method with reduced evaporation and runoff losses

Hydraulic – Referring to water

(IPM) Integrated Pesticide Management – An environmentally sensitive approach to pest management (**not** elimination) that uses the least toxic control method – a sustainable approach to managing pests by combining biological, cultural, physical, and chemical tools.

Loading – Term used in conjunction with *sediment* and *hydraulic* to describe excessive amounts (of the term that is described)

Naturescaping – An alternative landscaping technique that incorporates native plants and creates beneficial wildlife habitat – also conserves water and energy, reduces soil/water pollution.

Oil/Water Separator – A unit that is installed "in line" to a wastewater discharge pipe which is devised to capture petroleum derived materials that float on water

Pesticides – Products that are toxic and are used to kill pests - can be classified as insecticides, herbicides, rodenticides, biocides, aquacides.

POTW – Publicly Owned Treatment Works - - a municipal wastewater treatment plant

Scupper – an opening (in a bridge deck) to allow water drainage – it does not capture debris, particulate matter, or other solid materials

Sediments - Small particles of matter that settle to the bottom of a body of water

Silt – Material consisting of mineral soil particles ranging in diameter from 0.02 millimeters to 0.002 millimeters

Stormwater - rainwater runoff or snow melt waters – these waters can interact with different types of materials, transporting contaminants to surface waters (i.e. streams, creeks, rivers)

Toxicity –The relative degree of being poisonous

Xeriscaping – An alternative landscaping technique that conserves water and protects the environment.

Zero input, low input (lawns) - have minimal need for care (i.e. addition of fertilizers/pesticides, water, etc.)

LANDSCAPING AND LAWN CARE
POLLUTION PREVENTION/GOOD HOUSEKEEPING PRACTICES

1. IDENTIFY IMPACTS TO/ON STORMWATER/RECEIVING WATERS (SURFACE WATERS)

    - Nutrient loading (nitrogen and phosphorous) from fertilizer runoff can cause excessive aquatic plant growth

2. PROBLEM EVALUATION: ASSESS IMPACT ON RECEIVING WATERS, PRIORITIZE

    - Biochemical Oxygen Demand

3. IDENTIFY (AND CHOOSE APPROPRIATE) SOLUTIONS (BMP's)

    - Purchase only enough lawn care products necessary for one year – store properly to avoid waste generation (spills, leaks)
    - Use slow release or naturally derived (organic) fertilizers
    - Train employees in the proper application of lawn care products
    - Develop zero input/low input lawns
    - Consider alternative landscape techniques (i.e. naturescaping, xeriscaping)
    - Plant trees away from sewer lines or other underground utilities
    - Use drip irrigation techniques for landscaping

4. INSPECTION PROCEDURES

    - Routinely monitor lawns to identify problems during their early stages
    - Identify nutrient/water needs of plants, inspect for problems by testing soils

5. MAINTENANCE PROCEDURES

    - Minimize/eliminate fertilizer application
    - Leave grass clippings on lawn, or mulch clippings into lawn
    - Limit watering as necessary to supplement rainwater (1 inch/week is adequate)
    - Mow with sharpened blades set high (3 inches) – remove only the top 1/3 of the leaves
    - Water plants in the early A.M.

6. ADVISORY

    - Refer to the Cornell University website (Dept. of Horticulture)

SPILL RESPONSE AND PREVENTION
POLLUTION PREVENTION/GOOD HOUSEKEEPING PRACTICES

1. IDENTIFY MATERIALS THAT IMPACT STORMWATER/RECEIVING WATERS (SURFACE WATERS)

    - Liquids associated with vehicle/equipment maintenance products (oils, fuels, antifreeze, etc.)
    - Rock salt
    - Chemicals (fertilizers, pesticides)

2. PROBLEM EVALUATION: ASSESS IMPACT ON RECEIVING WATERS, PRIORITIZE

    - Toxicity
    - Biochemical oxygen demand

3. IDENTIFY (AND CHOOSE APPROPRIATE) SOLUTIONS (BMP's)

    - Keep all materials properly stored in closed, labeled containment systems
    - Use secondary containment systems where appropriate
    - Obtain spill recovery materials for immediate response to a spill

4. INSPECTION PROCEDURES

    - Inspect secondary containment systems, oil/water separators periodically
    - Inspect containers for leaks, areas near storm receiver inlets and outlets, floor drains for indications of spills

5. MAINTENANCE PROCEDURES

    - Pump out oil water separators as needed
    - Protect drains with oil absorbent materials
    - Clean out receivers on regular schedule
    - Remove spilled salt from salt loading area

6. ADVISORY

    - Report petroleum spills (as necessary) to the NYSDEC (851-7220 or 1-800-457-7362)
    - Refer to NYSDOT guidance information (Environmental Handbook for Transportation Operations)

PEST CONTROL
POLLUTION PREVENTION/GOOD HOUSEKEEPING PRACTICES

1. IDENTIFY IMPACTS TO/ON STORMWATER/RECEIVING WATERS (SURFACE WATERS)

    - Runoff of pesticides may harm aquatic life, may contaminate water/sediment

2. PROBLEM EVALUATION: ASSESS IMPACT ON RECEIVING WATERS, PRIORITIZE

    - Toxicity to aquatic plants and animals

3. IDENTIFY (AND CHOOSE APPROPRIATE) SOLUTIONS (BMP's)

    - Purchase only enough pesticides necessary for one year – store properly to avoid waste generation (spills, leaks, product deterioration)
    - Minimize/eliminate pesticide application, use lowest toxicity pesticides
    - Do not apply pesticides immediately prior to or during rain events
    - Ensure that employees are properly trained and certified in pesticide application techniques and safety
    - Develop zero input, low input lawns
    - Eliminate food, water, and shelter for pests
    - Adopt integrated pest management (IPM) techniques
    - Adopt alternatives to pesticides options (use physical, mechanical, or biological controls)

4. INSPECTION PROCEDURES

    - Identify pests – are levels acceptable or must action be taken to control pests?
    - Inspect pesticide inventory – properly dispose of out-of-date pesticide materials

5. MAINTENANCE PROCEDURES

    - Inspect pest traps (i.e. bait boxes) regularly – remove (and properly dispose of) dead pests
    - Block/eliminate access to buildings/structures for pests
    - Remove pests (insects) by hand

6. ADVISORY

    - Abide by NYSDEC regulations (6NYCRR Part 325) pertaining to this topic
    - Refer to the Cornell University website (Dept. of Horticulture)

PET WASTE COLLECTION
POLLUTION PREVENTION/GOOD HOUSEKEEPING PRACTICES

1. IDENTIFY IMPACTS TO/ON STORMWATER/RECEIVING WATERS (SURFACE WATERS)

    - Municipal animal shelters

2. PROBLEM EVALUATION: ASSESS IMPACT ON RECEIVING WATERS, PRIORITIZE

    - Biochemical oxygen demand
    - Solids loading

3. IDENTIFY (AND CHOOSE APPROPRIATE) SOLUTIONS (BMP's)

    - House all animals in an enclosed, roofed structure
    - ID/utilize "permitted" waste disposal facilities for animal wastes

4. INSPECTION PROCEDURES

    - Inspect shelter regularly for necessary cleanup/removal of wastes

5. MAINTENANCE PROCEDURES

    - Remove spilled food, animal wastes on a regular basis

6. ADVISORY

    - None

SEPTIC SYSTEM MANAGEMENT
POLLUTION PREVENTION/GOOD HOUSEKEEPING PRACTICES

1. IDENTIFY IMPACTS TO/ON STORMWATER/RECEIVING WATERS (SURFACE WATERS)

    - Ponding of improperly treated wastewaters (on the surface of a leach field or a sand filter system) can increase the biochemical oxygen demand of receiving waters.
    - Excessive amounts of disinfectant (i.e. chlorine) applied to a wastewater discharge from a sand filter system can cause toxicity to aquatic plants and animals

2. PROBLEM EVALUATION: ASSESS IMPACT ON RECEIVING WATERS, PRIORITIZE

    - Biochemical oxygen demand

3. IDENTIFY (AND CHOOSE APPROPRIATE) SOLUTIONS (BMP's)

    - Divert stormwater runoff (i.e. from roof drains) away from septic system
    - Divert groundwater (sump pump) discharges away from septic system
    - Locate swimming pools away from the septic system (at least 20' from the septic tank, at least 35' from the closest edge of the leach field or sand filter system)
    - Prevent problems caused by vegetation - growth of woody plants on the system
    - Prevent hydraulic loading - "Spread out" the use of devices which use large volumes of water across the entire day – clothes washing, dish washing, bathing, repair leaky fixtures
    - Minimize water usage by using flow restrictors on potable water distribution devices (i.e. shower heads, water faucets)

4. INSPECTION PROCEDURES

    Physical evidence of problems:

    - "back up" of wastewater in sewer lines
    - sewage odors
    - leach field/sand filter - wetness/ponding on surface
    - overflow of wastes from system components
    - heavy vegetation (woody plants) growth on system components

5. MAINTENANCE PROCEDURES

    - "Pump out" the septic tank as needed (NYSDEC recommends once/year)
    - Mow surface vegetation regularly
    - Prevent "heavy equipment" from driving on top of the system components

6. ADVISORY

- Obtain site plan/site sketch of system, and retain for reference.

VEHICLE/EQUIPMENT MAINTENANCE
POLLUTION PREVENTION/GOOD HOUSEKEEPING PRACTICES

1. IDENTIFY IMPACTS TO/ON STORMWATER/RECEIVING WATERS (SURFACE WATERS)

    - Trace amounts of metals/hydrocarbons are found in materials (i.e. fuels, antifreeze, batteries, motor oils, grease, parts cleaning solvents) that are typically used in maintenance operations

2. PROBLEM EVALUATION: ASSESS IMPACT ON RECEIVING WATERS, PRIORITIZE

    - Toxicity
    - Biochemical oxygen demand

3. IDENTIFY (AND CHOOSE APPROPRIATE) SOLUTIONS (BMPs)

    - Conduct maintenance work indoors – if work must be performed outside, guard against spillage of materials that could discharge to storm receivers
    - Seal floor drains that discharge directly to the environment, if possible
    - Initiate single purpose use of vehicle bays – dedicate one (or more) bays that have no (or sealed) floor drains for repairs/maintenance
    - Clean up spilled materials immediately, using "dry" methods
    - Install pretreatment systems (oil/water separators) where necessary in sewer lines to capture contaminants (oil, grit), and maintain as needed
    - Never leave vehicles unattended while refueling
    - Identify appropriate recycling/disposal options for wastes

4. INSPECTION PROCEDURES

    - Inspect (for maintenance purposes) floor drain systems, oil/water separators
    - Monitor "parked" vehicles/equipment for leaks

5. MAINTENANCE PROCEDURES

    - Maintain a clean work area – remove contaminants from floors, drains, catch basins, using "dry" methods
    - Use non-hazardous cleaners. Use non chlorinated solvents instead of chlorinated solvents
    - Repair or replace any leaking containers
    - Use steam cleaning /pressure washing instead of solvent for parts cleaning
    - Store waste fluids in properly capped, labeled storage containers
    - Store batteries in leak-proof, compatible (i.e. non reactive) containers
    - Rinse grass from lawn care equipment on permeable (grassed) areas
    - Protect against pollution if outside maintenance is necessary (cover storm receivers, use secondary containment vessels, etc.)

6. ADVISORY

- Report petroleum spills (as necessary) to the NYSDEC (851-7220 or 1-800-457-7362)
- Refer to NYSDOT guidance information (Environmental Handbook for Transportation Operations)

VEHICLE/EQUIPMENT WASHING
POLLUTION PREVENTION/GOOD HOUSEKEEPING PRACTICES

1. IDENTIFY IMPACTS TO/ON STORMWATER/RECEIVING WATERS (SURFACE WATERS)

    - Nutrients (biodegradable soaps)
    - Metals
    - Hydrocarbons

2. PROBLEM EVALUATION: ASSESS IMPACT ON RECEIVING WATERS, PRIORITIZE

    - Biochemical oxygen demand from nutrient sources
    - Toxicity
    - Hydraulic loading

3. IDENTIFY (AND CHOOSE APPROPRIATE) SOLUTIONS (BMPs)

    - Initiate single purpose use of vehicle bays - dedicate only one bay for washing (with floor drain system)
    - Perform cleaning with pressurized cold water, without the use of soaps, if wastewaters will flow to a **storm sewer** system
    - Use minimal amounts of biodegradable soaps **only** if wastewaters will discharge to a **sanitary sewer** system
    - Rinse with hoses that are equipped with automatic shutoff devices and spray nozzles
    - Steam clean (without soap) where wastes can be captured for proper disposal (i.e. oil/water separator)

4. INSPECTION PROCEDURES

    - Inspect floor drain systems regularly - use only those that discharge to a sanitary sewer, identify the need for cleaning of catch basins, oil/water separators

5. MAINTENANCE PROCEDURES

    - Map storm drain locations accurately to avoid illegal discharges
    - Perform steam cleaning or pressure washing where wastes can be captured for proper disposal
    - Take precautions against excess use of/spillage of detergents

6. ADVISORY

- Require all facilities to connect floor drain systems to sanitary sewers (if available)
- Refer to NYSDOT guidance information (Environmental Handbook for Transportation Operations)

ROADWAY AND BRIDGE MAINTENANCE
POLLUTION PREVENTION/GOOD HOUSEKEEPING PRACTICES

1. IDENTIFY IMPACTS TO/ON STORMWATER/RECEIVING WATERS (SURFACE WATERS)

    - Road salt components - sodium, calcium, and chlorides
    - Hydrocarbons
    - Particulates – such as dry paint or abrasive compounds
    - Debris

2. PROBLEM EVALUATION: ASSESS IMPACT ON RECEIVING WATERS, PRIORITIZE

    - Particulate matter
    - Toxicity

3. IDENTIFY (AND CHOOSE APPROPRIATE) SOLUTIONS (BMPs)

    - Incorporate preventive maintenance and planning for regular operations & maintenance activities
    - Pave in dry weather only.
    - Stage road operations and maintenance activity (patching, potholes) to reduce spillage. Cover catch basins and manholes during this activity.
    - Clean up fluid leaks or spills from paving equipment/materials immediately
    - Restrict the use of herbicides/pesticide application to roadside vegetation
    - Use porous asphalt for pothole repair and shoulder work
    - Sweep and vacuum paved roads and shoulders to remove debris and particulate matter
    - Maintain roadside vegetation; select vegetation with a high tolerance to road salt
    - Control particulate wastes from bridge sandblasting operations
    - Use calcium magnesium acetate for deicing around bridges to minimize corrosion
    - Clean out bridge scuppers and catch basins regularly
    - Direct water from bridge scuppers to vegetated areas
    - Mechanically remove (i.e. sweep) debris from bridge deck and structure prior to washing

4. INSPECTION PROCEDURES

    - Inspect paving, sweeping, vacuuming, and all other maintenance vehicles/equipment as appropriate
    - Inspect roads and bridges for implementation of applicable BMP’s

5. MAINTENANCE PROCEDURES

- Clean bridge scuppers routinely and keep free of debris
- Direct runoff water from bridges to vegetated areas
- Install catch basins in place of bridge scuppers
- Use tarps, booms, and vacuums during painting or blasting activities (refer to reference information to control/capture particulate matter)
- Repair leaking/defective containers or equipment on paving equipment

6. ADVISORY

- Refer to NYSDOT guidance information (Environmental Handbook for Transportation Operations)

ALTERNATIVE DISCHARGE OPTIONS FOR CHLORINATED WATER POLLUTION PREVENTION/GOOD HOUSEKEEPING PRACTICES

1. IDENTIFY IMPACTS TO/ON STORMWATER/RECEIVING WATERS (SURFACE WATERS)

    - Discharge of chlorinated (i.e. swimming pool, POTW) waters to surface waters can injure or kill aquatic life

2. PROBLEM EVALUATION: ASSESS IMPACT ON RECEIVING WATERS, PRIORITIZE

    - Toxicity
    - Hydraulic loading

3. IDENTIFY (AND CHOOSE APPROPRIATE) SOLUTIONS (BMPs)

    - Dechlorinate pool water before any discharge, be it over land or to the sanitary sewer, or allow the "disinfectant" to dissipate with sunlight, use, etc. prior to discharge
    - Use ultraviolet radiation or osmosis to disinfect water/wastewater
    - Backwash water should be discharged to the sanitary sewer, if available – if not available, discharge water over vegetated areas, not to surface waters

4. INSPECTION PROCEDURES

    - Check chlorine residuals prior to discharge.
    - Do not discharge wastewaters into the sanitary sewer system during periods of high flow.

5. MAINTENANCE PROCEDURES

    - Maintain proper levels of chlorine residuals in pool.
    - Allow disinfectant to dissipate prior to discharge of pool waters.

6. ADVISORY

    - Obtain permission from the municipal POTW prior to discharging any chlorinated pool waters to a sanitary sewer system.

HAZARDOUS AND WASTE MATERIALS MANAGEMENT
POLLUTION PREVENTION/GOOD HOUSEKEEPING PRACTICES

1. IDENTIFY IMPACTS TO/ON STORMWATER/RECEIVING WATERS (SURFACE WATERS)

    - Lube oils
    - Coatings and their compatible solvents (paints, thinners, etc.)
    - Anti freeze
    - Cleaning agents
    - Fuels (gas, diesel, kerosene)

2. PROBLEM EVALUATION: ASSESS IMPACT ON RECEIVING WATERS, PRIORITIZE

    - Biochemical oxygen demand
    - Toxicity to aquatic plants and wildlife
    - Particulate loading

3. IDENTIFY (AND CHOOSE APPROPRIATE) SOLUTIONS (BMP's)

    - Ensure that all materials are stored in closed, labeled containers – if stored outside, drums should be placed on pallets, away from storm receivers – inside storage areas should be located away from floor drains
    - Eliminate floor drain systems that discharge to storm drains, if possible
    - Use a pretreatment system to remove contaminants prior to discharge
    - Reduce stock of materials “on hand” – use “first in/first out” management technique
    - Use the least toxic material (i.e. non hazardous) to perform the work
    - Install/use secondary containment devices where appropriate
    - Eliminate wastes by reincorporating coating/solvent mixtures into the original coating material for reuse
    - Recycle materials if possible, or ensure proper disposal of wastes

4. INSPECTION PROCEDURES

    - Physical on-site verification of sealed floor drains (or redirected to sanitary sewer)
    - Regular inspection of material storage areas (inside and outside)
    - Regular inspection and cleaning of oil/water separators by qualified contractor
    - Inspect stormwater discharge locations regularly (for contaminants, soil staining, plugged discharge lines)

5. MAINTENANCE PROCEDURES

- Repair or replace any leaking/defective containers, and replace labels as necessary
- Maintain caps and/or covers on containers
- Maintain aisle space for inspection of products/wastes

6. ADVISORY

- Abide by NYSDEC regulations (6NYCRR Part 372) and OSHA regulations (29 CFR Part 1910) pertaining to these topics
- Refer to NYSDOT guidance information (Environmental Handbook for Transportation Operations)

OPERATIONAL BY PRODUCTS/WASTES
POLLUTION PREVENTION/GOOD HOUSEKEEPING PRACTICES

1. IDENTIFY IMPACTS TO/ON STORMWATER/RECEIVING WATERS (SURFACE WATERS)

    - Potential for leaching of toxic and biologic contaminants to receiving waters

2. PROBLEM EVALUATION: ASSESS IMPACT ON RECEIVING WATERS, PRIORITIZE

    - Toxicity
    - Biochemical oxygen demand

3. IDENTIFY (AND CHOOSE APPROPRIATE) SOLUTIONS (BMP's)

    - Post “no dumping” signs
    - Illuminate area if possible
    - Prevent access – erect barriers
    - Identify the by products/wastes that should be recycled (i.e. paper, cardboard) or can be legally disposed of on municipal lands (i.e. deer carcasses) by referencing NYSDEC regulations (6NYCRR PART 360)

4. INSPECTION PROCEDURES

    - Regularly scheduled inspections - for maintenance concerns
    - Unscheduled patrolling of areas by police

5. MAINTENANCE PROCEDURES

    - Clean area
    - Clean up and dispose of “illegally dumped” materials, trash/debris in accordance with environmental regulations
    - Cut and remove vegetation

6. ADVISORY

    - Abide by NYSDEC regulations (6NYCRR Part 360) pertaining to this topic
    - Refer to NYSDOT guidance information (Environmental Handbook for Transportation Operations)

CATCH BASIN AND STORM DRAIN SYSTEM CLEANING
POLLUTION PREVENTION/ GOOD HOUSEKEEPING PRACTICES

1. IDENTIFY IMPACTS TO/ON STORMWATER/RECEIVING WATERS (SURFACE WATERS)

    - **Catch basins** capture grit and debris, which, if not removed in a timely fashion, can discharge toxic and biological pollutants during rain and/or snow melt events
    - **Storm drainage systems**, while not designed for capture of solid materials, can perform in the same manner with similar results.
    - **Storm ditches**, if stripped of vegetation during cleaning, can result in silt deposition in receiving waters

2. PROBLEM EVALUATION: ASSESS IMPACT ON RECEIVING WATERS, PRIORITIZE

    - Toxicity – heavy metals, organic compounds, etc.
    - Biochemical oxygen demand
    - Sediment loading

3. IDENTIFY (AND CHOOSE APPROPRIATE) SOLUTIONS (BMP's)

    - Address:
        - storm drain receivers and (below grade) storm sewer systems
        - parking lot receivers
        - open ditches
        - catch basins and floor drain systems inside of buildings should be either:
            - sealed to prevent discharge
            - "permitted" by NYSDEC
            - discharged to sanitary sewers
    - Contaminated wastewaters should not be discharged to a catch basin/street receiver
    - Increase frequency of cleaning, as necessary
    - Repair/replace storm drain receiver and catch basin receiver grates as necessary

4. INSPECTION PROCEDURES

    - Physical inspection – prioritize storm drain systems and catch basins – catch basins on steep grades may need more frequent cleaning
    - Clean catch basin when depth of deposits are >1/3 the depth from the bottom of the basin to the invert of the lowest pipe/opening into or out of basin – Institute temporary street parking bans to facilitate access to catch basins
    - Ditch inspections – ID problems while traveling to job site
    - Storm event inspection – identify pollution problems (i.e. sediments) to determine the need for additional protective measures
    - Post storm event inspection – ID problems (i.e. blockages)

5. MAINTENANCE PROCEDURES

- Catch basins/storm sewer pipe – cleaning in spring to remove sand/grit/salt from winter road maintenance, cleaning in fall to remove leaves/silt/debris
- Established ditch:
  - Maintain proper slope
  - Maintain vegetation by cutting (to capture sediment) – Do not allow vegetation to grow to a height that would impair sight lines of drivers of motor vehicles
  - Remove obstacles/ debris – (i.e. trash, tree branches, brush, cut vegetation)
  - Excavation/ditch scraping – if necessary, use devices (i.e. hay bales, silt fence) to capture sediment prior to stormwater discharge into receiving waters, reseed ditch
- New installation – capture particulate matter – install sediment basins/other devices in ditch
- Proper disposal of debris

6. ADVISORY

- Refer to NYSDOT guidance information (Environmental Handbook for Transportation Operations)

STREET CLEANING AND MAINTENANCE
POLLUTION PREVENTION/GOOD HOUSEKEEPING PRACTICES

1. IDENTIFY IMPACTS TO/ON STORMWATER/RECEIVING WATER (SURFACE WATERS)

    - Poorly maintained streets allow for a "build up" of trash, grit, and debris, from which sediment and toxic/biological pollutants can be "washed out" during rain and /or snow melt events.
    - Street repair/paving processes use materials that can contaminate receiving waters if they interact with stormwater.

2. PROBLEM EVALUATION: ASSESS IMPACT ON RECEIVING WATERS, PRIORITIZE

    - Particulate matter – can cause sediment loading
    - Biochemical oxygen demand
    - Toxicity to aquatic plants and wildlife

3. IDENTIFY (AND CHOOSE APPROPRIATE) SOLUTIONS (BMP's)

    - Street sweeping/vacuuming - at regular intervals, and "as needed"
    - Perform operations such as paving in dry weather only.
    - Prior to road reconstruction, consider/evaluate the use of "shouldered roads" instead of "curbed roads"
    - Maintain roadside vegetation; select plants/trees that can withstand the action of road salt. Direct runoff to these areas.

4. INSPECTION PROCEDURES

    - Inspect streets, and plan (as needed) for maintenance/repairs
    - Prioritize – some streets (i.e. those on flat grades or with many trees) may need more frequent cleaning

5. MAINTENANCE PROCEDURES

    - Spring sweeping/vacuuming – remove salt/sand residues
    - Fall sweeping, collection of leaves at appropriate time intervals
    - Dry sweep or vacuum streets during dry weather
    - Initiate temporary street by street parking bans to allow access for cleaning
    - Maintain equipment - check for/repair fluid leaks
    - Stage road operations and maintenance activity (patching, potholes) to reduce spillage of materials. Cover catch basins and manholes during activity

6. ADVISORY

- Refer to NYSDOT guidance information (Environmental Handbook for Transportation Operations)

ROAD SALT STORAGE AND APPLICATION
GOOD HOUSEKEEPING/POLLUTION PREVENTION PRACTICES

1. IDENTIFY IMPACTS TO/ON STORMWATER/RECEIVING WATERS (SURFACE WATERS)

    - Salt is very soluble in water, and, in high concentrations, can have a deleterious effect on plants and aquatic life.

2. PROBLEM EVALUATION: ASSESS IMPACT ON RECEIVING WATERS, PRIORITIZE

    - Toxicity

3. IDENTIFY (AND CHOOSE APPROPRIATE) SOLUTIONS (BMP's)

    - Require covered facility for salt storage (prevents lumping and run-off loss), and size properly for seasonal needs
    - Store salt on highest ground elevation to mitigate contact with stormwater
    - Calibrate salt spreaders as necessary
    - Consider alternative deicing materials (i.e. calcium chloride, magnesium chloride)
    - Use a wetting agent with salt to minimize "bouncing" during application
    - Cover salt loading area, or build into storage shed
    - Unload salt deliveries directly into storage facility, or if not possible, move inside immediately

4. INSPECTION PROCEDURES

    - Look for physical evidence of problems:

        - inspect salt storage shed for leaks, other problems
        - inspect salt piles for proper coverage, tarps for leaks or tears
        - inspect salt application equipment
        - inspect salt regularly for lumping or water contamination
        - inspect surface areas for evidence of runoff – salt stains on ground near and around the salt shelter, loading area, or downslope
        - inspect for excessive amounts of salt on roads

5. MAINTENANCE PROCEDURES

    - Service trucks and calibrate spreaders regularly to ensure accurate, efficient distribution of salt
    - Educate and train operators on hazards of over-salting to roads and environment
    - Repair salt storage shed (leaks)
    - Repair/replace tarps

6. ADVISORY

- Refer to NYSDOT guidance information (Environmental Handbook for Transportation Operations)

ROAD KILL COMPOSTING OPERATIONS
GOOD HOUSEKEEPING/POLLUTION PREVENTION PRACTICES

1. IDENTIFY IMPACTS TO/ON STORMWATER/RECEIVING WATERS (SURFACE WATERS)

    - Potential for leaching of biologic contaminants to receiving waters

2. PROBLEM EVALUATION: ASSESS IMPACT ON RECEIVING WATERS, PRIORITIZE

    - Biochemical oxygen demand

3. IDENTIFY (AND CHOOSE APPROPRIATE) SOLUTIONS (BMP's)

    - Establish compost pile/windrow on a well drained, impervious surface that has minimal slope – segregate from other operations
    - Identify the proper types of materials that should be composted
    - Locate compost piles at least 200 ft. from receiving waters or wetlands
    - Prevent access by vermin/scavengers – erect barriers (i.e. snow fence) around pile

4. INSPECTION PROCEDURES

    - Check for odors, temperature of compost, exposed carcasses
    - Keep records (use a daily log)

5. MAINTENANCE PROCEDURES

    - Monitor temperatures
    - Take samples, analyze for pathogens
    - Establish windrows
    - Prevent erosion
    - Recycle completely composted material

6. ADVISORY

    - Abide by NYSDEC regulations (6NYCRR Part 360) pertaining to this topic
    - Refer to NYSDOT guidance

CONSTRUCTION AND LAND DISTURBANCE
POLLUTION PREVENTION/GOOD HOUSEKEEPING PRACTICES

1. IDENTIFY IMPACTS TO/ON STORMWATER/RECEIVING WATERS (SURFACE WATERS)

    - Sediment runoff (i.e. silt, debris) can affect fish reproduction and habitat
    - Removal of shade trees from stream banks can increase water temperature which can result in reduced dissolved oxygen content in streams

2. PROBLEM EVALUATION: ASSESS IMPACT ON RECEIVING WATERS, PRIORITIZE

    - Particulate matter – can cause sediment loading
    - Biochemical oxygen demand – increases with temperature, depletes oxygen

3. IDENTIFY (AND CHOOSE APPROPRIATE) SOLUTIONS (BMP's)

    - Plan the construction and/or land clearing activities so that soil is not exposed for long periods of time
    - Minimize compaction of soils and impervious cover
    - Maximize opportunities for infiltration
    - Install sediment control devices before disturbing soil
    - Limit grading to small areas
    - Stabilize site to protect against sediment runoff
    - Protect against sediment flowing into storm drains
    - Maintain native vegetation (especially near waterways)
    - Install sediment barriers on slopes or divert stormwater

4. INSPECTION PROCEDURES

    - Regularly scheduled inspections (of erosion safeguards)
    - Inspect during storm or snow melt events

5. MAINTENANCE PROCEDURES

    - Check/repair all devices that have been installed to ensure protection against erosion

6. ADVISORY

    - Refer to NYSDOT guidance information (Environmental Handbook for Transportation Operations)
    - NY State Standards and Specifications for Sediment and Erosion Control
    - NY State Stormwater Management Design Manual

MARINA OPERATIONS
POLLUTION PREVENTION/GOOD HOUSEKEEPING PRACTICES

1. IDENTIFY IMPACTS TO/ON STORMWATER/RECEIVING WATERS (SURFACE WATERS)

    - Liquids associated with boat maintenance products (oils, fuels, antifreeze, wood preservatives, etc.)and particulate matter (i.e. boat bottom paint from hull sanding) can contain toxics
    - Boat sewage can contain pathogenic bacteria that contribute increased biochemical oxygen demand to waterways
    - Barren soils can contribute to sedimentation

2. PROBLEM EVALUATION: ASSESS IMPACT ON RECEIVING WATERS, PRIORITIZE

    - Biochemical oxygen demand
    - Toxicity
    - Sediment loading

3. IDENTIFY (AND CHOOSE APPROPRIATE) SOLUTIONS (BMP's)

    - Construct and maintain pump out stations (for sanitary wastes)
    - Build and maintain fish cleaning stations
    - Stabilize shoreline
    - Designate locations for boat maintenance away from the water
    - Minimize impervious areas – install vegetated buffer strips (i.e. grass, shrubs)
    - Provide spill clean up kits at fueling stations, covered trash receptacles
    - Educate (posters, signage) boaters and other marina users of potential problems

4. INSPECTION PROCEDURES

    - Identify areas of runoff that lack vegetation
    - Regularly inspect fueling stations (including tanks and piping), maintenance areas for spills, other potential sources of pollution
    - Regularly check (and empty as necessary) fish cleaning stations, sewage pump out stations, trash cans

5. MAINTENANCE PROCEDURES

    - Empty trash cans and pump out stations as needed
    - Maintain vegetated areas between the water and work areas
    - Replace spill clean up kits as necessary

6. ADVISORY

- Refer to: Shipshape Shores and Waters: A Handbook for Marina Operators and Recreational Boaters - http://www.epa.gov/owow/nps/marinashdbk2003.pdf